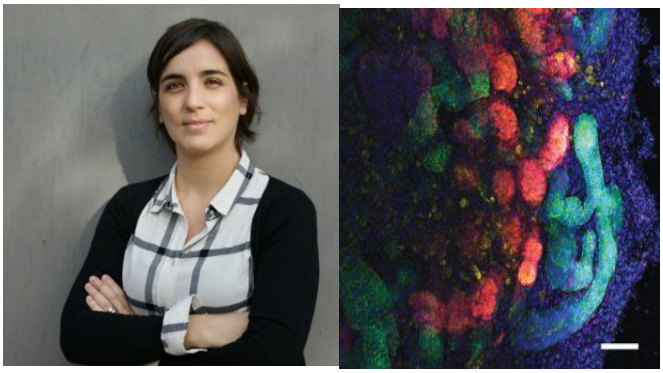
Biomedicine Discovery Seminar Series

Speaker: Nuria Montserrat,PhD

Title: Human pluripotent stem cells for tissue engineering: towards the development of cellular platforms for regenerative medicine.
Institute for Bioengineering of Catalonia (IBEC)

20 de Septiembre, 15:00 horas Aula Francisco Grande, IIS-Fundación Jiménez Díaz.
Avda. Reyes Católicos, 2 Madrid



The generation of induced pluripotent stem cells (iPSCs), especially the generation of patient-derived pluripotent stem cells suitable for disease modelling in vitro, opens the door for the potential translation of stem-cell related studies into the clinic. Similarly, the possibility to engineer human embryonic stem cells (hESCs) with patient-related mutations expands the possibilities to interrogate for disease-associated phenotypes in an isogenic background.

The combination of gene-editing based methodologies together with the development of novel protocols for cell differentiation from human pluripotent stem cells (including iPSCs and hESCs), provides a unique scenario for modelling disease progression, and eventually, for the identification of the molecular and the cellular mechanisms leading to organ regeneration.

Conversely, to fully develop in vitro and ex vivo platforms for organ regeneration, in our lab we are also focused in the development of reporter cell lines for different transcription factors essential for tissue-specific commitment and differentiation (i.e: renal and cardiac lineages). The possibility to combine engineered pluripotent stem cell lines (i.e, using genome editing approaches such as TALEN or CRISPR/Cas9, among others) together with decellularized matrices, functionalized biomaterials and 3D bioprinting technology offers and unprecedented opportunity for the immediate generation of in vitro and ex vivo cellular platforms for disease modelling and organ regeneration.

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